

## REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Amendments to Claims

Claim 1 has been amended to recite that the frangible bullet of the invention is made of a compressed powdered metal, as opposed to (for example) a ceramic. Compressed powdered metal is disclosed at various places in the original specification, including page 4, lines 17-19:

*There is currently a long-felt need for a method that enables cannelures to be formed in frangible powdered metal type projectiles intended for general use.*

and page 5, lines 1-5:

*It is a further objective of the invention to provide a method of canneluring a frangible projectile, without the need to harden the projectile, and which is suitable for used with powdered metal compositions, including lead-free compositions.*

Accordingly, the amendment to claim 1 does not represent “new matter.”

2. Rejection of Claims 1 and 2 Under 35 USC §102(b) in view of U.S. Patent No. 4,939,996 (Dinkha)

This rejection is respectfully traversed on the grounds that the Dinkha patent does not disclose or suggest canneluring of a frangible bullet made of a lead-free compressed powdered metal. Instead, the Dinkha patent discloses canneluring of a **ceramic** bullet, and specifically defines “ceramic,” as explained in col. 6, lines 6-10, in a way that excludes the claimed powdered metal material:

*...By ceramic is meant any inorganic, nonmetallic material capable of being densified, e.g. zirconia, especially toughened or partially-stabilized zirconia, zirconia-alumina composites, and whisker-reinforced ceramics.*

Thus, Dinkha actually *teaches away* from the claimed invention.

Not only does Dinkha define “ceramic” in such a way as to preclude powdered metal, but Dinkha actually specifically distinguishes compressed powdered metal materials from the ceramic described therein. For example, in lines 51-55 of col. 1, the Dinkha patent states that:

*. . . Attempts at producing a frangible or practice projectile have included projectiles composed of or including compacted metal powder (U.S. Patent No. 3,63,047, issued Aug. 26, 1969 to Germerschausen). . .*

The Dinkha patent then goes on, in col. 1, lines 67 *et seq.*, to specifically distinguish such prior “attempts” at producing frangible or practice projectiles on the grounds that:

*None of these materials have been found satisfactory for economically producing a projectile having the ballistic characteristic necessary for realistic practice.*

Thus, the Dinkha patent does not anticipate, and would not have suggested, any sort of compressed powdered metal bullet, much less one with a cannelure as claimed.

In contrast, it is a principal objective of the present invention is to provide cannelured compressed powder bullets. It is well-known to cannelure conventional metal bullets because the cannelures can easily be machined or milled. However, as explained in lines 12-15 on page 2 of the original specification:

*Conventional machining or milling techniques tend to fracture or weaken the projectile, which is typically made of a compressed powder rather than solid material.*

It is respectfully submitted that the same is true of ceramic bullets, *i.e.*, that a “ceramic” bullet of the type taught by Dinkha corresponds to the conventional metal bullets mentioned in the description of the prior art on page 2 rather than to the compressed powdered metal bullet of the claimed invention. While both the ceramic bullet and the compressed powdered metal bullet are described as “frangible,” the ceramic bullet is more easily machined or milled than a compressed powdered metal bullet. Rather than addressing the problems of canneluring a compressed powdered metal bullet, Dinkha suggests using a particular ceramic that does not have the characteristics of the prior powdered metal bullet (which was not cannelured).

Because Dinkha specifically defines the ceramic disclosed therein in a way that excludes the claimed compressed powdered metal, the Dinkha patent clearly does not anticipate the claimed invention, and withdrawal of the rejection of claims 1 and 2 under 35 USC §102(b) is respectfully requested.

3. Rejection of Claim 11 Under 35 USC §103(a) in view of U.S. Patent No. 4,939,996 (Dinkha)

This rejection is respectfully traversed on the grounds that because the Dinkha patent **teaches away** from a compressed powdered metal bullet, specifically distinguishing an non-cannelured prior art compressed powdered metal bullet (col. 1, lines 51-55, quoted above), the Dinkha patent could not have suggested the claimed invention to the person of ordinary skill in the art.

In order to obtain the claimed invention, it would have been necessary to apply the bullet design shown therein to a compressed powdered metal bullet. However, the Dinkha patent provides no teachings that would have caused the ordinary artisan to do so. Instead, Dinkha discusses the unsuitability of compressed powdered metal for economical production. This is hardly a suggestion or teaching that previously non-cannelured compressed powdered metal bullets should be cannelured. Dinkha suggests a cannelure in a ceramic bullet, but not in a compressed powdered metal bullet that is much more difficult to cannelure.

As explained in **MPEP 2143.02:**

*If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)...The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate" 123 USPQ at 352. (See also, MPEP 2141.02, p. 2100-107 "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention (emphasis in the original).*

It is respectfully submitted that substitution of compressed powdered metal for the ceramic specifically taught by Dinkha would constitute exactly the type of substantial reconstruction and redesign referred to by the authors of MPEP 2143.02, and that a failure to consider the portions of Dinkha that teach away from the claimed invention would be contrary to MPEP 2141.02's requirement that references be considered "as a whole."

Because Dinkha teaches away from the claimed invention, the rejection of claim 11 under 35 USC §103(a) is improper and should be withdrawn.

4. Rejection of Claim 3 Under 35 USC §103(a) in view of U.S. Patent No. 4,939,996 (Dinkha) and 6,536,352 (Nadkarni)

This rejection is respectfully traversed on the grounds that the Nadkarni patent, like the Dinkha patent, does not disclose or suggest canneluring of a cannelured frangible bullet made of a lead-free compressed powdered metal, as claimed. Furthermore, while Nadkarni teaches adding copper and tin to a compacted powdered metal bullet, it does not teach adding copper and tin to a *ceramic* bullet of the type taught by Dinkha, and certainly does not include any teachings that would have caused the ordinary artisan to ignore the teachings of Dinkha concerning the inadequacy of compacted powdered metal.

Initially, it is respectfully noted that while Dinkha's non-metallic ceramic bullet is cannelured, Nadkarni discloses yet another non-cannelured powdered metal bullet, providing still further evidence that canneluring a powdered metal bullet would not have been obvious to the ordinary artisan. It is not a coincidence that none of the numerous patents disclosing compressed powdered metal bullets shows one with a cannelure, and yet many of the patents disclosure solid metal bullets (or ceramic bullets in the case of Dinkha) show cannelures.

As to the proposed combination, the fact that adding copper and tin increases the frangibility of a compacted powder bullet, as taught by Nadkarni, does not logically imply that adding copper and tin increases the frangibility of a ceramic bullet of the type taught by Dinkha,

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or overcome Dinkha's teaching that the ceramic bullet should be "non-metallic." Dinkha's ceramic can be made as frangible as desired without adding copper and tin, and there is no teaching in Nadkarni that copper and tin should be added to any material other than powdered metal. Therefore, one of ordinary skill in the art would not have turned to Nadkarni for teachings on how to increase the frangibility of Dinkha's ceramic bullet, and the proposed combination of Dinkha and Nadkarni could not have suggested the claimed invention, whether the references are considered individually or in any reasonable combination.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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